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# COMMON ALFALFA INSECTS

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Alfalfa Weevil
(after Cooley)

UNIVERSITY OF MINNESOTA
AGRICULTURAL EXTENSION DIVISION

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ALFALFA is rapidly becoming one of Minnesota's principal field crops. The acreage increased from 605 acres in 1900 to 45,419 in 1920 and 196,396 acres in 1924. With such a rapid increase of alfalfa acreage, the growers should become acquainted with the more important insects that are likely sooner or later to attack the crop. Alfalfa is so new to many sections of the state that many of the insects reported as injurious in other places have not yet appeared on Minnesota farms, but farmers must be prepared to meet these unwelcome visitors when the time arrives.

There are two aspects to the problem of insects on alfalfa. One concerns those that attack the forage, the others, those infesting the seed. No sharp line can be drawn between these two because many insects normally found feeding on the leaves are injurious to seed because of their attacks on the blossoms and young ovaries in the seed pods.

## Grasshoppers

Many people fail to realize that tho alfalfa makes a luxuriant growth, the damage done it by even a moderate infestation of hoppers is considerable. When the grasshoppers are in very large numbers, the need for control measures is obvious. The farmer may be sure, however, that even if the alfalfa is not visibly suffering but grasshoppers are "fairly thick" in the crop, it is worth while poisoning them. The formula to use is the same as that recommended for general grasshopper control and is reprinted from Circular No. 17 of the Agricultural Extension Division, which gives detailed directions for mixing the bait.

| | |
|---|---|
| Coarse wheat bran (free from shorts) | 100 lbs. |
| Crude white arsenic | 5 lbs. |
| Salt | 5 lbs. |
| Amyl acetate (technical grade) | 3 ounces |
| Molasses (low grade) | 2 gallons |
| Water | 10 to 12 gallons |

This bait should be scattered at the rate of about twenty pounds to the acre.

The best time of day to apply the bait depends on the weather. As a general rule, to obtain the maximum killing, it should be applied between 8 and 11 a.m. on a clear, warm day. Young grasshoppers are readily controlled by the use of this bait. It must be emphasized, therefore, that **the poison bait for grasshoppers must be applied early in the season while the hoppers are still small and before they have had time to set back the growth of the plant.**

## Blister Beetles

In the summer of 1924 many reports were received of bad infestations of blister beetles. They are long, narrow beetles, from half an inch to an inch and a half long, and either black or gray in color. The gray species is more common in the early spring than is the black.

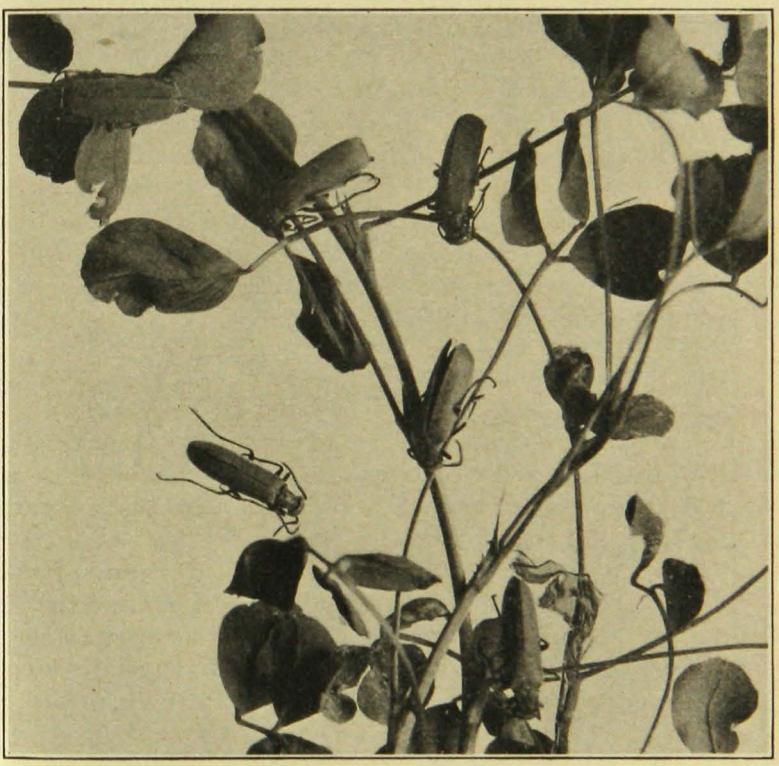

Fig. 1. Blister Beetles

Their attacks are not confined to alfalfa, but when they appear on that crop they do considerable damage especially to first-year alfalfa, which they often damage so badly that the stand is ruined. They usually appear in large numbers without warning and at first are found, not scattered through the crop, but in patches. This is the best time to control them with poison dust but if they are scattered through the field before dust can be applied, the whole field should be given an application of the dust.

**Formula for dust for blister beetles.—**

15 parts (by measure) hydrated lime
1 part (by measure) crude white arsenic or paris green.

When paris green and the lime are mixed, the green color is readily detected through the mixture, hence an even mixture can be obtained even if more of the lime is used. If paris green is used, the proportion of lime can be increased to 20 parts by measure to one part by measure of the poison. **This dust should be very thoroly mixed** and can then be applied by means of a small dust gun, or shaken out on the alfalfa through an ordinary gunny sack. The person applying the dust should walk through the field, shaking the sack as he walks and keeping the bottom of the sack fairly close to the top of the alfalfa plants, but not touching them. In this way the dust is sifted through the leaves for a considerable distance so that the dust need only be applied at intervals of about one and a half rods. Days of high winds should be avoided because on what appears to be a perfectly still day, there is enough movement of the air to carry the dust through the leaves. The dust acts as both a repellant and a poison and can be relied upon to rid the alfalfa of the blister beetles.

## Sugar Beet Webworms

Occasionally the alfalfa grower is alarmed at the sudden appearance of an army of worms. They are green with some mottlings of both yellow and black, and when seen in alfalfa fields will be an inch or an inch and a quarter long. They advance very much as army worms do, eating the crop down as they go.

This is the sugar beet webworm. It is a serious enemy of sugar beets and must be rigorously repressed in beet growing sections. On alfalfa, however, it does little damage, as it migrates only when almost full grown and soon stops feeding. If control measures are deemed advisable, the dust recommended for blister beetles may be applied.

## Cutworms

The sight of marching hordes of army worms and army cutworms is familiar to many farmers, and alfalfa growers can expect attacks from these pests in the seasons of their abundance. They will completely ruin a crop of alfalfa if allowed to go undisturbed. Fortunately, however, they can be controlled without great expense if action is taken quickly. Trenching, together with poison baits, gives the best results. The accompanying diagram shows the method of making the trench.

This trench should be plowed across the line of march of the worms. The next step is the preparation of the poisoned bait. The bait is prepared by mixing 1 pound paris green in 30 gallons of water and spraying the mixture on weeds, alfalfa, or hay. This poison bait is put into the trench as quickly as possible. Or the poisoned water can be left in a barrel and the weeds or whatever carrier is used, dipped

into it. Care should be taken to keep the whole mixture well stirred. The poisoned weeds can then be thrown into the trench. This method of control has been satisfactory under various circumstances.

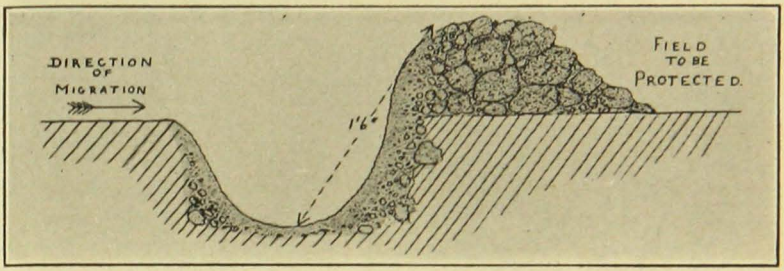


Fig. 2. Diagram of Trench for Stopping Marching Cutworms and Army Worms

If spraying machinery is available, the alfalfa may be sprayed just ahead of the advancing worms with a spray made of 2 pounds paris green to 100 gallons of water and with the addition of 1 pound of lime to avoid burning. This would make a trench unnecessary.

## Alfalfa Weevil

Alfalfa weevil is a serious pest in the western states. Minnesota fortunately has never had any reports of the presence of the alfalfa weevil and a survey of the principal alfalfa territory in the state has failed to disclose its presence. The figure on the cover gives a good idea of what the insect looks like.

It is possible that Minnesota may never have to contend with the alfalfa weevil but strict lookout should be maintained and any signs of damage reported promptly to the Agricultural Experiment Station, University Farm, St. Paul.

## Alfalfa Seed Thrips

If a stem of alfalfa, particularly one with blossoms on it, is shaken over a piece of white paper, numerous small insects are shaken out. They vary in color from very light to very dark brown, are about one tenth of an inch long, and are very active. These are thrips, and tho insignificant in size are of considerable importance to the seed grower. They live on the juices of the plant, especially the young immature ovaries and the unopened blossom buds. Every farmer who has tried to grow alfalfa seed is familiar with the conditions known as "blasted buds." Altho there is no doubt that some of this damage is due to conditions which are very little understood at present, it has been definitely shown that thrips are responsible for a large share of the trouble.[1] Figure 3 gives a good idea of the difference between a healthy and a blasted blossom stem.

[1] Seamans. Canadian Entomologist. 1923.

**Control measures.**—Suggestions for the control of this insect are complicated by the fact that in Minnesota some farmers take the first crop for seed while others take the second, and it will be some time before the best method for each locality and for each kind of season is worked out.

Fig. 3. Healthy Stem of Alfalfa on the Left
"Blasted" Buds and Bare Flower Stem on Right (Seamans)

Control measures are based on the fact that the eggs of the thrips are laid in the stem of the plant. If the crop is cut, eggs and very young stages of the insect dry up. For farmers who use the first crop for seed, it is advisable to "clip" the alfalfa as soon as it is high enough to let the mower make a clean job. If it can be pastured until the end of May, a much better control can be expected, as stock also destroys adults when the leaf buds in which they are living, are eaten.

If the second crop is left for seed, the first crop should be cut a little earlier, just as the blossoms are appearing. No data are available as to the effect of the earlier cutting on the stand of alfalfa, but the possibilities are that no ill effects will follow.

It must be borne in mind that using this cultural practice for the control of thrips does not ensure a crop of seed. The factors making for seed production are very little understood and a crop of alfalfa

may not make seed even if thrips have been controlled. It can be said, however, that if conditions are right for the setting of seed, the control of thrips is a paying proposition.

### Alfalfa Seed Chalcid

The alfalfa seed chalcid is without doubt the most serious of the insects directly affecting the seed crop. It is a small, black, four-winged fly which lays its eggs in the green alfalfa seed. From the egg hatches a tiny legless grub which grows by feeding on the contents of the seed until finally there is nothing left of the seed but a shell. The grub then transforms into an intermediate stage, called a pupa. This stage, like that of the grub, is spent in the seed. From the pupa the adult emerges and escapes from the seed by cutting a hole through the seed and then through the pod. This process goes on from spring to fall as long as there are green alfalfa seeds in which the adult can lay eggs.

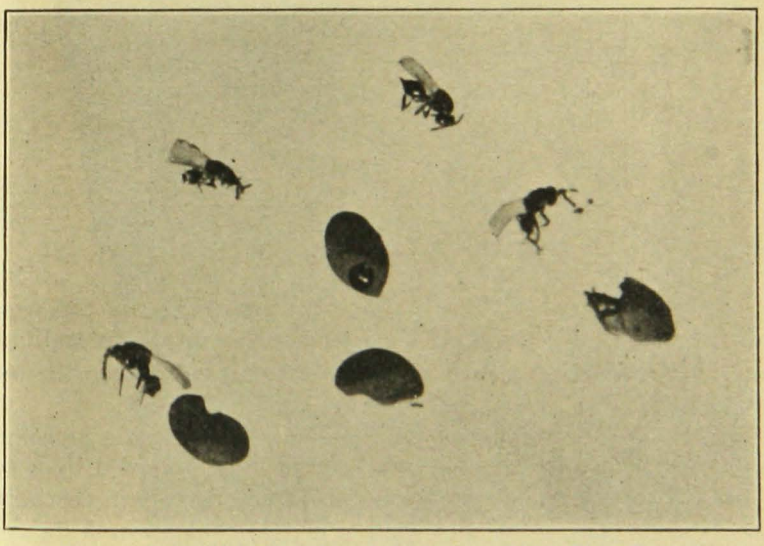

Fig. 4. Some Adult Chalcids and Seeds from Which They Emerged

When frost comes, the adult chalcids which are flying around are killed, but the brood which is still in the seeds goes through the winter and emerges in the spring. These early spring specimens seek out early blooming clover and alfalfa. This is usually by roadsides and headlands where clover or alfalfa is not cut, but left to produce seed undisturbed. By the time the alfalfa in the field is seeding, the first brood of chalcids has emerged from this volunteer growth and is ready to infest the main crop.

The alfalfa seed chalcid is found in Minnesota wherever clover and alfalfa are grown. It will without doubt increase as greater acreages are left for seed growing. In some places from 70 per cent to 80 per cent of the seeds in the field are infested. This is a serious loss and it is to be hoped that Minnesota alfalfa seed growers will try to avoid repetitions of these losses.

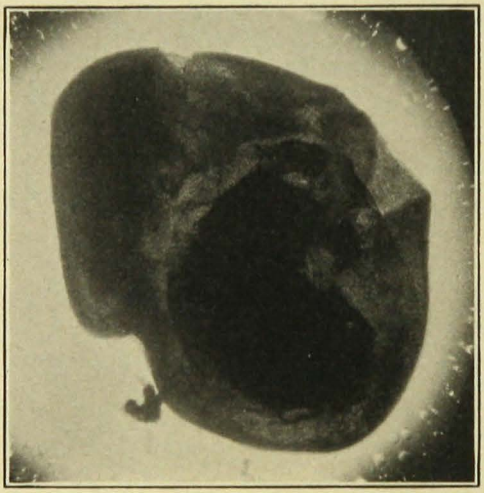

Fig. 5. Looking Through a Seed Showing the Grub Within

**Control measures.**—These might be summed up by the words "clean farming." Keep the alfalfa and clover on roadsides and headlands either mowed or pastured. Thoroly clean and reclean the seed. Burn the trash from both thresher and cleaning mill.

**Rotation.**—A rotation like that recommended by the agronomy division in which four or five years of alfalfa are followed by a year of corn and oats will undoubtedly aid in helping to keep in check such other insects as wireworms and white grubs that might attack the crop.